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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/791,187	SMITH ET AL.
	Examiner	**Art Unit**
	Benjamin C. Lee	2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 18 April 2008.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-69 and 72-86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-10,22-25,31-37,44-49,54-56,63,64,67,73,74,76,78 and 80-86* is/are allowed.

6)☒ Claim(s) *11-21,26-30,38-43,50-53,57-62,72,75,77and 79* is/are rejected.

7)☒ Claim(s) *65,66,68 and 69* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response To Amendment

Claim Status

1. Claims 1-69 and 72-86 are pending.

Claim Rejections - 35 USC § 103

2. Claims 11-12, 14-15, 17-21, 26-30, 38, 40-43, 50-53, 57-61, 75, 77 and 79 are rejected under 35 U.S.C. 103(a) as being obvious over Marsh et al. (US 5726630 which incorporated by reference on col. 4, lines 40-42 of 07/816,893 (US pat. #5,537,105) by Marsh et al.) in view of Johnson et al. (US 6239765), Lebo (US 5900808) and Kodulkala et al. (US pat. 6,215,402).

1) Claim 11: Marsh et al. discloses the claimed remote communication device (transponder 38) comprising: communication circuitry (RFID circuitry of Fig. 4) configured to at least one of receive communication signals and generate communication signals; and an antenna coupled with the communication circuitry and configured to communicate wireless signals corresponding to the communication signals including at least one of receiving wireless signals and outputting wireless signals (Fig. 2A), the antenna having a plurality of (first and second) frequencies via a broadband nature of the antenna (Abstract); except specifying the claimed wherein the antenna having <u>substantially resonant</u> frequencies; an impedance reduction strip integrated within a frequency tuning portion of the antenna; and a quarter-wavelength transmission line coupled intermediate the communication circuitry of the antenna..

While Marsh et al. teaches a known dual band RFID transponder system in which the transponder responds to the dual band frequencies simultaneously using a broadband antenna (Abstract), Johnson. et al. teaches a known multiple frequency band dipole antenna that can

communicate multiple bands of tuned resonant frequencies simultaneously (Abstract; Figs. 4-7 & 9; col. 2, lines 31-42; col. 3, lines 45-62). In view of the teachings by Marsh et al. and Johnson et al., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to employ a known dual band resonant frequency/band antenna such as taught by Johnson et al. in a system such as taught by Marsh et al. to differentiate the system's communication signals from other systems', e.g. noise associated with the broadband antenna that is responsive to frequencies other than the 2 frequencies/band of interest.

Lebo teaches the known use of quarter-wave transmission line/balun as an inexpensive and low loss way of connecting the dipole antenna output to the corresponding device circuitry (col. 7, lines 25-30). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include a quarter wave transmission line as taught by Lebo between the antenna and the circuitry as a connection means for improved antenna performance in Marsh et al. and Johnson et al.

Furthermore, Kodulkala et al. teaches the known use of an impedance matching method for an antenna in RFID communication using an impedance matching (including reduction) strip (Fig. 2A and col. 5, line 40 and col. 6, line 55) so that the impedance are matched between the antenna components and the circuitry. In view of the teachings by Marsh et al., Johnson et al., Lebo and Kodulkala et al., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that such including impedance reduction strip as taught by Kodulkala et al. between antenna components and the RFID device circuitry taught by Marsh et al., Johnson et al. and Lebo. acts to tune the antenna to one of the frequencies since frequency

tuning is affected by impedance and impedance matching, whereby the impedance reduction strip is part of and integrated within the frequency tuning portion of the antenna.

2) Claim 12: Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious the claimed remote communication device according to claim 11, including the claimed wherein the antenna is substantially tuned to the resonant frequencies (col. 2, lines 31-42 of Johnson et al.)

3) Regarding claim 14, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 11, including: the claimed wherein the antenna is configured to output the wireless signals, and further comprising another antenna coupled with the communication circuitry and configured to receive the wireless signals at a plurality of substantially resonant frequencies (separate transmitter and receiver antennas shown in Fig. 4 of Marsh et al.)

4) Regarding claim 15, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 14, including: the claimed wherein the another antenna is configured to communicate via backscatter modulation (backscatter communication in col. 5, lines 9-19 of Marsh et al. whereby a resonance parameter, e.g. impedance, is being variably controlled as well known in the art and compatible with the combined teachings of the prior art.)

5) Claim 17: Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious the claimed remote communication device according to claim 11, including the claimed RFID circuitry (Fig. 4 of Marsh et al.)

6) Regarding claim 18, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in the consideration of claim 11, including:

--specifying the claimed wherein the frequency bands are first and second frequency bands such that a center frequency of the second frequency band is at least twice higher than a center frequency of the first frequency band (first is centered at approximately 915 MHz., and second is centered at approximately 2.45 GHz. according to col. 2, lines 31-42 of Johnson et al.; col. 5, lines 50-65)

While Marsh et al. teaches the use of wideband RFID devices and Johnson et al. teaches the known use of multiband dipole antenna having the claimed frequency bands without specifying the known use of such bands in RFID, Kodulkala et al. discloses that 915 MHz. and 2.45 GHz. are two of the frequencies conventionally known and used for RFID communication (col. 5, lines 40-67). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to choose the frequency bands in Marsh et al. and Johnson et al. so that they are centered at approximately 915 MHz and 2.45 GHz. since these are frequencies used in known RFID protocols. Furthermore, such use of frequency bands satisfies the claimed limitation.

7) Regarding claim 19, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 18, including:

--the claimed wherein the antenna is configured to output the wireless signals, and further comprising another antenna coupled with the communication circuitry and configured to receive the wireless signals at a plurality of substantially resonant frequencies (separate transmitter and receiver antennas shown in Fig. 4 of Marsh et al.)

8) Regarding claim 20, Marsh et al., Johnson et al., Lebo and Kodulkala et al.. render obvious all of the claimed subject matter as in claim 19, including: the claimed wherein the

another antenna is configured to communicate via backscatter modulation (backscatter communication in col. 5, lines 9-19 of Marsh et al. whereby a resonance parameter, e.g. impedance, is being variably controlled as well known in the art and compatible with the combined teachings of the prior art.)

9) Regarding claim 21, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as claim 18, including Kodulkala et al. teaches the known use of an impedance matching method for an antenna in RFID communication using an impedance matching (including reduction) conductor (Fig. 2A and col. 5, line 40 and col. 6, line 55).

10) Regarding claim 26, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in the consideration of claims 11 and 18.

11) Regarding claim 27, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 26, including: the claimed wherein the antenna is configured to communicate at the one frequency responsive to a frequency of communication of the interrogator (see Marsh et al.)

12) Regarding claim 28, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 26, including:

--the claimed wherein the antenna is configured to receive the forward signals, and further comprising another antenna coupled with the communication circuitry and configured to output the return signals at one of a plurality of frequencies (separate transmitter and receiver antennas shown in Fig. 4 of Marsh et al.)

13) Regarding claim 29, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 28, including: the claimed wherein the another antenna is configured to communicate via backscatter modulation (backscatter communication in col. 5, lines 9-19 of Marsh et al. whereby a resonance parameter, e.g. impedance, is being variably controlled as well known in the art and compatible with the combined teachings of the prior art.)

14) Regarding claim 30, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 26, wherein: since Kodulkala et al. teaches the known use of an impedance matching method for an antenna in RFID communication using an impedance matching (including reduction) conductor (Fig. 2A and col. 5, line 40 and col. 6, line 55) so that the impedance are matched between the antenna components and the circuitry in the combined teaching of Marsh et al., Johnson et al. and Kodulkala et al., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that such included impedance reduction conductor between antenna components and the RFID device circuitry taught by Marsh et al., Johnson et al., Lebo and Kodulkala et al. acts to tune the antenna to one of the frequencies since frequency tuning is affected by impedance and impedance matching.

15) Claim 38: Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in the consideration of claim 11, wherein:

The discrete frequency bands in Marsh et al. and Johnson et al. reads on the claimed limitation of wherein the antenna is not tuned to at least one frequency between the first and second different frequency bands.

16) Regarding claims 40-41, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 38, including: the claimed providing a remote communication device having a plurality of antennas individually substantially tuned to first and second different frequency bands, wherein the communication comprises receiving using one of the antennas and outputting using another of the antennas (separate transmitter and receiver antennas shown in Fig. 4 of Marsh et al.)

17) Claims 42-43: Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 38, including: the claimed processing wireless signals using the remote communication device and said providing comprises providing an RFID device (Figs. 1-4 of Marsh et al.).

18) Regarding claims 50-52, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious the claimed subject matter as in the consideration of claims 11 and 18, plus see Abstract and disclosure corresponding to Figs. 1-4, col. 5, lines 9-19 regarding backscatter RFID device communication, and incorporated US pat. # 5,537,105: col. 3, lines 48-49 which indicated that the RFID device further could use a single or separate antennas).

19) Regarding claim 53, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious the claimed subject matter as in claim 50, plus see Abstract and disclosure corresponding to Fig. 4 of Marsh et al., and incorporated reference US pat. #5,537,105 on col. 3, lines 4-49, in which the receiving and transmitting use the same antenna and carrier frequencies.

20) Regarding claims 57 and 61, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in the consideration of claims 11 and 18.

21) Regarding claim 58, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 57, including: the claimed power source coupled with the communication circuitry (C, 34, Supply Voltage in Fig. 4 of Marsh et al.)

22) Regarding claim 59, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 57, including RFID communication circuitry (Fig. 4 of Marsh et al.).

23) Regarding claim 60, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 57, plus receive and transmit antennas in Fig. 2A of Marsh et al.

24) Regarding claim 75, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 18, wherein the different frequencies are used as carriers in Marsh et al.

25) Regarding claim 77, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 26, wherein the different frequencies are used as carriers in Marsh et al.

26) Regarding claim 79, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 38, plus the consideration of claim 11 and 77.

3. Claims 13, 16 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh et al. (incorporating US 5537105 Marsh et al. by reference) in view of Johnson et al., Lebo, Kodulkala et al. and Murakami (US 5,512,910).

1) Regarding claim 13, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 11, except: the claimed wherein the antenna is configured to electromagnetically communicate with a return loss of less than or equal to approximately -9 dB at the first and second frequencies.

While Marsh et al. and Johnson et la. teaches a transponder conducting backscattering communication using multiple antenna resonant frequencies using a dipole antenna, Murakami discloses using an antenna (microstrip/patch antenna according to Figs. 1a-1b) having multiple resonant frequencies (f1, f2, f3) with corresponding return losses of about –10dB, -15 dB, -10 dB, respectively (Fig. 6); which meets the claimed limitation.

In view of the teachings of Marsh et al., Johnson et al., Lebo, Kodulkala et al. and Murakami, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to implement the antenna in Marsh et al., Johnson et al., Lebo and Kodulkala et al. to have a low return loss characteristic such as taught by Murakami, since low return loss is generally desired for an antenna in a communication device for optimal signal, range, or power considerations, especially for a low/limited power type transponder such as taught by Marsh et al., Johnson et al., Lebo and Kodulkala et al.

2) Regarding claim 16, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 11, plus the consideration of claim 13 further in view of Murakami.

3) Regarding claim 39, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 38, plus the consideration of claim 13 further in view of Murakami.

4. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hecht et al. (US 6,411,212) in view of Marsh et al.

1) Regarding claim 62, Hecht et al. discloses:

a) claimed forward and return communication of the RFID device and communication circuitry are met by the construction and communication between the RFID device (TR) and interrogator (see interrogation antenna A) according to the figures and corresponding disclosure;

b) claimed return signal having a return range larger than the forward range (col. 1 to col. 2, Abstract and figures show known use of dedicated on-board power source, either a battery or a charging means, provides extended range communication as opposed to tags relying solely on passive interrogation signal powering, which inherently provides that the return signal range can be larger than the forward range);

while:

c) Marsh et al. teaches the known alternative use of separate antennas for receiving and transmitting in a tag (Fig. 4).

In view of the teachings by Hecht et al. and Marsh et al., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to utilize known separate receiving and transmitting antennas such as taught by Marsh et al. in a tag as taught by Hecht without unexpected results.

5. Claim 72 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh et al., Johnson et al., Lebo and Kodulkala et al. further in view of Cook et al. (US pat. 5,320,561).

1) Regarding claim 72, Marsh et al., Johnson et al., Lebo and Kodulkala et al. render obvious all of the claimed subject matter as in claim 57, while:

Cook et al. teaches the known loading/tuning effect of a battery on a nearby antenna and the need for taking such effect into account when regarding antenna parameters (col. 1, lines 52-55; col. 4, line 57 to col. 5, line 14).

In view of their teachings, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to take into account the tuning/loading effect of the battery on the nearby antenna (co-located on a small area of the transponder) when providing the intended frequencies/bands in such design in Marsh et al., Johnson et al., Lebo and Kodulkala et al., since such tuning/loading effect has been known in the art as taught by Cook et al.

Allowable Subject Matter

6. Claims 1-10, 22-25, 31-37, 44-49, 54-56, 63-64, 67, 73-74, 76, 78 and 80-86 are allowed.

7. Claims 65-66 and 68-69 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response To Arguments

8. Applicant's arguments filed 4/18/08 have been fully considered but they are not persuasive.

1) The different frequencies used in Marsh et al. are illustrative but does not preclude the use of different frequencies so long as they are different to allow avoiding weak or null interrogation signal zones caused by combination of direct and reflected signals. Use of frequencies of Johnson/Kodulkala in Marsh et al. would not have contradicted such objective, and applicant has not provided substantiated evidence to the contrary. Since Marsh et al. teaches

using different frequencies, and Johnson teaches the technical feasibility of implementing a multiple discrete bands antenna using the claimed frequencies relationship and Kodulkala teaches the known use of the same specific frequencies (915Mhz, 2.4 Ghz) and frequency-relationship in an RFID System, one skilled in the art would have recognized to choose the plural of such known RFID frequencies in the Marsh et al. implemented on an antenna that has been proven feasible by Johnson so long as the frequencies do not contradict the intended objective of Marsh et al. as stated above. Therefore, applicant's argument regarding their combination is not deemed persuasive.

2) RFID systems by definition is for identifying objects the tags are attached to using the tags' identification codes. This is well known and obvious even if it is not inherent in the RFID systems of Marsh et al. and Kodulkala.

3) Claim 62 has been amended with new features, and has been rejected under new grounds by introduction of new prior art. See above rejection for detail.

4) Arguments regarding claims having indicated allowable subject matter above are moot.

5) See above rejection for detail of how and why each rejected claim and corresponding claim limitations are rendered obvious by the prior art singularly or in combination.

6) In conclusion, applicant's arguments are not deemed persuasive regarding the above rejected claims, and their rejection stands.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin C. Lee whose telephone number is (571) 272-2963. The examiner can normally be reached on Mon -Thu 9:00Am-5:30Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Benjamin C. Lee/
Primary Examiner, Art Unit 2612